

ICT, Reorganization and Productivity

Laura Abramovsky¹ and Rachel Griffith²

Productivity growth rates in European economies have been on average lower than those in the US since the mid-1990s, due to both the acceleration in productivity growth in the US and a deceleration in some major European economies. The empirical evidence points to the slower adoption of information and communication technologies (ICT) as a key factor in explaining the divergence in productivity growth. The US experienced particularly strong productivity growth in sectors that use ICT intensively. The literature also shows European countries having lower levels of ICT investment than the US, and it seems, therefore, that the EU has not yet exploited the productivity enhancing potentials of ICT.

These correlations between growth and ICT have been shown at the macro level. The micro empirical evidence on the mechanisms by which ICT adoption facilitates growth emphasises complementarities between ICT, skills and organisational structure within the firm, particularly the role of ICT in facilitating *internal* reorganisation and flexible management within the firm or plant. However, one of the biggest changes in the structure of the US has been *external restructuring*, and in particular the rapid increase in business services outsourcing, as evidenced by the rapid growth in this sector.

This growth in business services indicates that firms are increasingly outsourcing non-core activities. In this paper we look at empirical evidence on the extent to which reductions in the price of ICT have also led to restructuring of the boundaries of firm activity (not just within the firm). ICT enables firms to reorganize the production process through fragmentation and specialisation. One important way in which ICT affects productivity is by increasing the adaptability and compatibility of, for example, business services with the needs and technologies of the purchasers of these services. It facilitates the move from the specific to the general. This means that many activities can be concentrated in specialist firms and returns to scale exploited. Firms that outsource may experience productivity growth due to specialisation, which can translate into aggregate productivity growth.

In Abramovsky and Griffith (2005), we considered the impact that ICT had on purchasers of outsourced services, through reducing transaction and adjustment costs of moving activity outside the firm, and of carrying it out at greater geographic distance. We found that more ICT intensive firms purchase a greater amount of services in the market, and they are more likely to purchase offshore than less ICT intensive firms.

To what extent does greater investment in ICT enabled firms to reorganise production and purchase specialised business services, thus increasing efficiency and productivity? In this paper we investigate whether the complementarities between ICT and outsourcing of services are positively related to productivity. We use micro data at the line of business level for the UK and we estimate production functions including interactions of ICT and purchases of services as explanatory variables. The UK is an interesting case since it has a higher ICT capital stock than other European countries and the business services sector has substantially grown in the last decade while being one of the few service sectors that closed the productivity gap with its major competitors. Our first findings indicate that there are some complementarities between ICT and the *external* reorganisation of the firms, which is positively correlated with productivity.

¹ IFS, UCL and AIM (laura_a@ifs.org.uk)

² IFS, UCL and AIM (rachel_g@ifs.org.uk)